

## Femur

In erect pos. oblique - more in female.

Head - more than  $\frac{1}{2}$  sphere.

- covered with cartilage except  
fovea capitis - ligamentum teres.  
attached.

Neck - constricted portion connecting  
head + shaft

- forms angle of  $125^\circ$  - greater in infancy  
angle less in female.

Greater trochanter - lateral side.

outer surface - gluteus medius  
gluteus minimus

inner surface - obturator foramen

Lower trochanter - medially + posteriorly.

- ilio-tibial band

- trochanteric line (front)

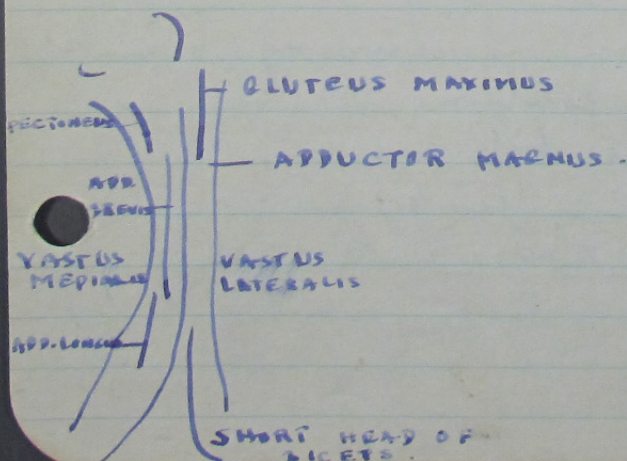
trochanteric crest (back)

Shaft - 3-sided.

- broadens out before.

- nutcracker intermetatars.

- linea aspera





## Muscles of Hip.

### Anterior.

#### Psoas major.

- abdominal muscles relaxed, psoas deep in groin, medial to sartorius
  - flexes thigh on trunk with iliacus
  - strongest hip flexor, that works best after hip is partially flexed
- If leg is fixed - psoas flexes lumbar spine.
- has rotation power - femur medially.

#### Psoas minor.

- behind abdominal muscles. (vanishing muscle)
- assists in tilting pelvis up.

#### Iliacus.

- palpable in thin subject, around anterior superior spine.
- acts with psoas as a hip & trunk flexor.
- tips pelvis forward & downward

#### Ilio - psoas.

- important is maintaining trunk in upright position.
- will not initiate hip flexion. (sartorius & tensor)

Walking without ilio - psoas.



### Sartorius. (tailor muscle)

- easily felt + visible
- crosses hip joint obliquely.
- 1) - flexes hip + knee.
- abduction + outward rotation occur at same time as specific action.
- 2) - medial rotator of tibia, when knee joint partly flexed.

### Tensor fasciae latae.

Felt crossing hip joint lateral to sartorius

- "flexes hip with <sup>2</sup> medial rotation of thigh
- <sup>3</sup> abductor (during hip flexion)
- ilio-tibia fascia goes below knee joint.
- T.F.L. by attachment to ilio-tibia may attempt to extend knee joint.
- nerve supplying to T.F.L. same as gluteus medius. (superior-gluteal.)

### Posterior.

#### Gluteus medius

- felt well to back.
- "great hip extensor
- <sup>2</sup> some lateral rotation.
- because <sup>3</sup> inserted in the tibial head
- <sup>4</sup> is important maintaining upright pos.
- lifts pelvis up.
- in most people v. man. doesn't work in walking.



### Gluteus medius

- felt below iliac crest.
- post. to T.F.L.
- felt just

### Gluteus minimus

- covered by g. med.
  - both abductors of hip joint
  - ant. fibres will do medial rotation of femur.
  - reversed action brings side bending.
- Standing on 1 leg uses abductor.

### Group of 6 small muscles

- O. - ischium & posterior pubis & inserting on great trochanter of femur.
- can't be felt (under gluteus muscles)
  - in extension, helped by gluteus max.
  - in flexion - unassisted.

Use - strengthen capsule of hip joint.

### Adductors

- Medial side of thigh - upper half.
- this group consists 5 muscles from pubis & att. to linea aspera of femur.
- all felt but adductor brevis.
- all but magnum - adduct strongly flex hip.



● - in position to laterally rotate femur.

Adductor magnus.

- felt - don't mistake hamstrings.
- fibres from pubis (obturator nerve)
- adduction
- ischial fibres (sciatic nerve)
- hip extension.



## ● Patella.

- sesamoid-bone in a tendon.
- hold tendon of quadriceps away from the bone, better mechanical advantage.
- $\Delta$  shape, apex down.

Ant. surface - rough for tendon.

Post. " - covered with cart.  
- 2 articular facets.

Upper border -

Apex - ligamentum patella

Patella - lies against lower end of femur.

## ● Applied Anatomy

- Frequently fractured by direct violence - a violent contraction of quadriceps. Bone must be wired together.

## ● Tibia.

- long,  $\Delta$  shaft.

Upper extremity

- 2 condyles, prox condyles of femur inner thinner, outer stouter.

- medial - more extensive, long & narrow

Inter - condyloid eminence.

- non-articular.

Cruciate ligaments att. front & behind eminence.

- tuberosity tubercle of tibia - for ligamentum patellae.
- back of lateral condyle.
- fibula articulates.



back of medial epicondyle - groove -  
- insertion of semi-membranosus.

Shaft -  $\Delta$ .

- ant. border & medial surface subcutaneous.
- lat. border - attach. of interosseous membrane - splitting lower in fibular notch.

Medial surface of tibia

- Sartorius
- Gracilis
- Semi-tendinosus

$\int$   
16  
1 S.T.

lateral surface.

- Tibialis Anterior.

Posterior surface.

- Soleal - (Popliteal) line.
- $\Delta$  above soleal line. - Popliteus.
- to soleal line
  - Soleus muscle.
- below & medially
  - Flexor ~~hallucis~~ <sup>digitorum</sup> longus.
- & laterally
  - Tibialis posterior.

Lower end of tibia.

Medial malleolus.

- art. lower surface of talus extends to medial malleolus.
- fibular notch, lateral side
  - lower att. of fibula.



## ● Applied Anatomy.

Frequently fractured, usually by middle lower, direct violence + compound.  
Pott's fracture - lower third of fibula + medial malleolus.

## Fibula. (Knoche)

8 muscles att. + molds shape.

4 functions - att. of muscles.

- brace for tibia

- socket for ankle.

- pulley for Peronei muscles.

Head - art. lateral condyle of tibia.

- Styloid process posteriorly

- att. lateral ligament of knee-joint.

Shaft - twisted by muscle pull.

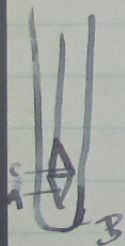
Lower end - forms lateral malleolus.

A. - Δ art. facet for talus

B. - post. tib. - fibular lig.

C. - rough for interosseous lig. of inf. tib. fib. syndesmon.

D. - line for interosseous membrane.



Lateral malleolus - extends  $\frac{1}{2}$  to 1 inch lower than other m.

## Applied Anatomy.

~~Fracture~~

Pott's fracture undetected, because bone doesn't break out.



Quadriceps		Extensors of
Rectus femoris -		front of thigh (flexes hip)
Rectus inter.		
Rectus med.		palpable.

Rectus works better at knee than at hip.  
 If hamstrings flex the knee, rectus  
 can expend power on the hip.  
 Standing pos. possible, but walking  
 + running is impossible. In  
 movements of resistance to body wt.  
 these muscles act.

Hamstrings - palpable, differentiated at  
 their tendons.

- flexors of thigh, knee &  
 extensors of hip.
- in walking, act in hip  
 extension.
- have effect on pelvis,  
 tip forward if contracted
- when knee is semi-flexed  
 thighs rotate leg out +  
 semi-man. & semi-tow.  
 rotate it in.
- short head of biceps has  
 no effect on hip joint.

Popliteus - palpable.

- small muscle, unlocks knee joint  
 at beginning of flexion.



1. Post. | Calcaneum  
Talus

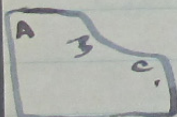
2. Middle | Navicular  
Cuboid  
Cuneiforms (3)

3. Ant. | Metatarsals (5)  
Phalanges (14)

Talus - art. with 4 bones.  
tibia, fibula - above.  
navicular - in front.  
calcaneum - below.  
- no muscle attach.

Series terni.

Calcaneum.



- bears wt. lower calf muscles.  
- art. with talus - above.  
cuboid - front.

A - bare bone.

B - art. with talus.

C -

Distant aculum Tali  
medial side for talus

● Post. - smooth for a bursa.  
- below - ridge - att. of tendon Achilles.  
- below rough.





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